

IN THE TITLE:

Please amend the title as follows:

“High Resolution Sensing Method and Apparatus for Scanner”

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the present patent application.

1. (Currently Amended) A high-resolution sensing method for a scanner, to allow the scanner to have a scan resolution thereof increased m times, wherein the scanner comprises a motor and a charge coupled device, and the charge coupled device has m rows of sensors spaced a distance from each other, the sensing method comprising:

moving the motor a distance substantially equal to a width of one row of the sensors at a speed substantially equal to the width divided by an exposure time; and

using m rows of the sensors concurrently to scan during the exposure time, so as to obtain a plurality of staggered image signals.

2. (Currently Amended) The sensing method according to claim 1, wherein the distance between rows of sensors is substantially equal to $(x/m)+n$ times of the width, wherein x is a positive integer smaller than m , and n is an integer equal to or larger than 0.

3. (Currently Amended) The sensing method according to claim 1, wherein the motor comprises is a step motor.

4. (Original) The sensing method according to claim 1, wherein the staggered image signals are processed and re-sorted to obtain a plurality of image data.

5. (Currently Amended) A high-resolution sensing method for a scanner, to increase a resolution of the scanner to $m+1$ times, wherein the scanner has a motor and a charge coupled device, and the charge coupled device further has m rows of sensors spaced a distance from each other, the sensing method comprising:

moving the motor to a distance substantially equal to $m/(m+1)$ times the width of one row of the sensors in a speed equal to $m/(m+1)$ times the width divided by an exposure time; and

using the m rows of sensors to concurrently scan during the exposure time, so as to obtain a plurality of staggered image signals.

6. (Currently Amended) The sensing method according to claim 5, wherein the distance between the rows of sensors is equal to n times the width, and n is an integer equal to or larger than 0.

7. (Currently Amended) The sensing method according to claim 5, wherein the motor is comprises a step motor.

8. (Original) The sensing method according to claim 5, wherein the staggered image signals are processed and re-sorted to obtain a plurality of image data.

9. (New) An apparatus, comprising:

means for allowing a scanner to have a scan resolution thereof increased m times, wherein the scanner comprises a motor and a charge coupled device, and the charge coupled device has m rows of sensors spaced a distance from each other, the means for allowing a scanner to have a scan resolution increase of m times including

means for moving the motor a distance substantially equal to a width of one row of the sensors at a speed substantially equal to the width divided by an exposure time; and

means for using m rows of the sensors concurrently to scan during the exposure time, so as to obtain a plurality of staggered image signals.

10. (New) The apparatus of claim 9, wherein the distance between rows of sensors is substantially equal to $(x/m)+n$ times of the width, wherein x is a positive integer smaller than m , and n is an integer equal to or larger than 0.

11. (New) A method, comprising:

scanning concurrently a first portion and a second portion of a document using a first row of sensors for the first document portion and a second row of sensors for the second document portion, the first and second rows of sensors not immediately adjacent to each other;

scanning concurrently a third portion and a fourth portion of a document using the first row of sensors for the third document portion and the second row of sensors for the fourth document portion; and

sorting data from the first and second rows of sensors to produce image data.

12. (New) The method of claim 11, wherein the first and second rows of sensors are spaced apart from each other at least a distance of one quarter of the width of each of the rows of sensors.

13. (New) An apparatus, comprising:

means for scanning concurrently a first portion and a second portion of a document using a first row of sensors for the first document portion and a second row of sensors for the second document portion, the first and second rows of sensors not immediately adjacent to each other;

means for scanning concurrently a third portion and a fourth portion of a document using the first row of sensors for the third document portion and the second row of sensors for the fourth document portion; and

means for sorting data from the first and second rows of sensors to produce image data.

14. (New) The apparatus of claim 13, wherein the first and second rows of sensors are spaced apart from each other at least a distance of one quarter of the width of a row of sensors.

15. (New) A method, comprising:

dividing a scanning area into a plurality of scanning regions;

scanning a first portion of one of the plurality of scanning regions using a first array of sensors during a first time period;

scanning a second portion of said one of the plurality of scanning regions using a second array of sensors during a second time period; and

scanning a portion of another of the plurality of scanning regions using the first array of sensors during the second time period.

16. (New) The method of claim 15, further comprising sorting data from the first and second arrays of sensors to assemble image data.

17. (New) An apparatus, comprising:

means for dividing a scanning area into a plurality of scanning regions;

means for scanning a first portion of one of the plurality of scanning regions using a first array of sensors during a first time period;

means for scanning a second portion of said one of the plurality of scanning regions using a second array of sensors during a second time period; and

means for scanning a portion of another of the plurality of scanning regions using the first array of sensors during the second time period.

18. (New) The method of claim 17, further comprising means for sorting data from the first and second arrays of sensors to assemble image data.